



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,305	03/23/2001	Toshiaki Hongo	P 0279274 EL01001CDC	4649

909 7590 08/13/2002  
PILLSBURY WINTHROP, LLP  
P.O. BOX 10500  
MCLEAN, VA 22102

EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
----------	--------------

1763

DATE MAILED: 08/13/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/815,305

Applicant(s)

HONGO ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 10-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

Claim 7 is objected to because of the following informalities: in claim 7, line 2, after "wherein", it appears that the word --the-- or --said-- needs to be inserted for proper grammar. Appropriate correction is required.

### ***Election/Restrictions***

Applicant's election of group I in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 10-13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomoyasu et al., U.S. Patent 5,900,103.

Tomoyasu et al. shows the invention as claimed including a plasma processing apparatus 700 for applying a plasma process to an object to be processed, the plasma process apparatus comprising: a process chamber 710 in which the object to be processed is subjected to the plasma process; a gas introducing part (see fig. 37) connected to said process chamber so as to introduce a reactant gas into said process chamber and including an inlet port 738A and a an outlet port 750A; a first vacuum pump connected to said process chamber through an exhaust line 760 so as to evacuate gas from said process chamber so that said process chamber is maintained at negative pressure; and a gas-evacuating arrangement 750A connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part (see figs. 35 and 37 and col. 16-line 42 to col. 18-line 25).

With respect to claim 6, Tomoyasu et al. discloses a gas introducing part comprising a dielectric plate 774 and a shower plate 780a provided on a top of said process chamber so as to introduce the reactant gas from the top of said process chamber, a gas passage 770 being formed between said dielectric plate and said shower plate so that the reactant gas flows through the gas passage and is introduced into said process chamber through said shower plate. Additionally, Tomoyasu et al. also shows wherein the dielectric plate has an inlet port connected to said gas passage so as to supply the reactant gas to said gas passage, and said gas passage has an outlet port to which said gas-evacuating arrangement is connected (see fig. 37).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomoyasu et al., U.S. Patent 5,900,103.

Tomoyasu et al. is applied as above but lacks anticipation of wherein said gas-evacuating arrangement comprises a second vacuum pump connected to said gas-introducing part, and wherein said gas-evacuating arrangement comprises a bypass passage which connects said gas-introducing part to said first vacuum pump by bypassing said process chamber. However, in view of the disclosure provided by Tomoyasu et al. it would have been obvious to one of ordinary skill in the art at the time

Art Unit: 1763

the invention was made to either have a second vacuum pump to evacuate the gas-introducing part in order to allow for separate controllability to evacuate either the process chamber or the gas introduction part at desired times, or to connect the gas-introducing part via a bypass to the first vacuum pump so as to reduce the overall size and complexity of the apparatus of Tomoyasu et al..

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomoyasu et al., U.S. Patent 5,900,103 in view of Fairbairn et al., U.S. Patent 5,614,055.

Tomoyasu et al. is applied as above but lacks anticipation of wherein said gas-introducing part has a plurality of circumferentially arranged nozzles through which the reactant gas is introduced into said process chamber. Fairbairn et al. discloses a planar showerhead having multiple nozzles in an opposed relation to the substrate (see col. 13-lines 35-49 and fig. 4). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Tomoyasu et al. so as to include the gas nozzles in the showerhead as suggested by Fairbairn because this will allow for better coverage of gas to the workpiece.

Claims 1, 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tei et al., 2002/0011215 A1 in view of Tomoyasu et al., U.S. Patent 5,900,103.

Tei et al. shows the invention substantially as claimed including a plasma processing apparatus for applying a plasma process to an object to be processed, the

plasma processing apparatus comprising: a process chamber 101 in which the object to be processed is subjected to the plasma process; a gas introducing part connected to said process chamber so as to introduce a reactant gas into said process chamber and including a dielectric plate 113 and a shower plate 106 provided on a top portion of said process chamber so as to introduce the reactant gas from the top of the process chamber, a gas passage being formed between the shower and dielectric plates so that the reactant gas flows through the gas passage and is introduced into said process chamber through said shower plate; and a first vacuum pump connected to said process chamber through said exhaust 102 so as to evacuate gas from said process chamber so that said process chamber is maintained at a negative pressure (see fig. 1 and paragraphs 0061-0077). Additionally, Tei et al. discloses additional embodiments with a slot antenna having a plurality of slits so as to guide a microwave having a predetermined frequency and where the density of slits is substantially uniform in a radial direction of said slot antenna (see paragraphs 103-108).

Tei et al. fails to expressly disclose a gas-evacuating arrangement connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part. Tomoyasu et al., U.S. Patent 5,900,103 discloses a gas evacuating arrangement 750A (see Fig. 37) connected to a gas-introducing part so as to evacuate the gas from the gas-introducing part. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Tei et al. so as to include a gas evacuating arrangement in the gas introducing part so as to eliminate unnecessary gas from the gas introducing part (see col. 18-lines 19-21).

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tei et al., 2002/0011215 A1 in view of Tomoyasu et al., U.S. Patent 5,900,103.

Tei et al. and Tomoyasu et al. are applied as above but lacks anticipation of wherein said gas-evacuating arrangement comprises a second vacuum pump connected to said gas-introducing part, and wherein said gas-evacuating arrangement comprises a bypass passage which connects said gas-introducing part to said first vacuum pump by bypassing said process chamber. However, in view of the disclosure provided by Tomoyasu et al. it would have been obvious to one of ordinary skill in the art at the time the invention was made to either have a second vacuum pump to evacuate the gas-introducing part in order to allow for separate controllability to evacuate either the process chamber or the gas introduction part at desired times, or to connect the gas-introducing part via a bypass to the first vacuum pump so as to reduce the overall size and complexity of the apparatus of Tei et al. modified by Tomoyasu et al..

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tei et al., 2002/0011215 A1 in view of Tomoyasu et al., U.S. Patent 5,900,103 in view of Fairbairn et al., U.S. Patent 5,614,055.

Tei et al. and Tomoyasu et al. are applied as above but lacks anticipation of wherein said gas-introducing part has a plurality of circumferentially arranged nozzles through which the reactant gas is introduced into said process chamber. Fairbairn et al. discloses a planar showerhead having multiple nozzles in an opposed relation to the



Art Unit: 1763

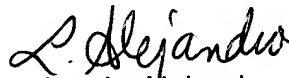
substrate (see col. 13-lines 35-49 and fig. 4). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Tei et al. modified by Tomoyasu et al. so as to include the gas nozzles in the showerhead as suggested by Fairbairn because this will allow for better coverage of gas to the workpiece.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 305-4545. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills, can be reached on 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 892-7310 for regular communications and 892-7311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

  
Luz L. Alejandro  
Patent Examiner  
Art Unit 1763

August 12, 2002